

Cultivating the Next Generation of International Digital Government Researchers: A Community-Building Experiment

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ABSTRACT

Over the last two decades universities and post-secondary education policies have addressed globalization trends by internationalizing curricula and articulating global concern in their missions. This paper presents the evaluation of an international training program for early-career digital government researchers, designed to develop their interest and skill in cross-cultural, multidisciplinary, and practice-oriented research. The program overall appears to stimulate participants' individual creativity, scholarly productivity, and professional networks, while broadening their appreciation for work that investigates internationally important topics and involves not only multidisciplinary but multicultural teams. The survey results also suggest that a short-term (one-week), intensive, immersive, and relatively inexpensive program can have strong and lasting effects on early-career scholars.

Categories and Subject Descriptors

K.3 COMPUTERS AND EDUCATION

General Terms

Experimentation

Keywords

International Digital Government Research, International Education and Research Training

1. INTRODUCTION

As globalization continues to influence world affairs, a clear and growing need exists for internationally-trained, culturally sensitive scholars who can work effectively in a complex, information-intensive environment. While this need is evident across all fields, it is especially critical for scholars who investigate the role of government in confronting the challenges of globalization. Examples of these challenges include regulation of world financial markets, control of infectious diseases, response to disasters, migration of jobs and workers, and global environmental stewardship.

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From 2007 to 2010, under a United States National Science Foundation (NSF) Directorate for Computer and Information Science and Engineering (CISE) grant [#IIS-0540069] for “Building a Sustainable Digital Government Research Community,” the Center for Technology in Government (CTG) conducted two quasi-experiments designed to test innovative approaches to stimulate long-lasting international impacts and professional networks within this community of scholars. As a field of inquiry, digital government is fertile ground for this effort – it is relatively young and small, but growing, diverse and global [8].

We know the impacts of information and communication technologies and burgeoning information content influence governments world-wide, but their effects and interactions vary widely according to demographic, economic, and political differences. As such, the field is ripe for international collaboration to address at least two kinds of phenomena-comparative topics (such as citizen engagement) that can be examined and compared across various national or cultural contexts, and transnational problems (such as public health epidemics) that have essential information components and transcend political and cultural boundaries [9].

The first of the two experiments was a set of three international working groups composed of scholars from a variety of countries and disciplines focusing together on essential questions of public governance, North American cooperation, and early crisis detection [10]. The second experiment was an annual, residential, research institute for PhD students (iGov Research Institute) designed to encourage young scholars at the beginning of their careers to develop an appreciation for the global impact of information and communication technologies on the public sector. The working group evaluation has been presented elsewhere [10]. This paper reports the evaluation of the iGov Institute.

By contrast to the working group experiment in which the same three groups of senior and junior scholars worked together over three years including periodic face-to-face meetings, the iGov Institute experiment (<http://www.ctg.albany.edu/institute>) was an immersive experience in international engagement for successive cohorts of doctoral students. Each year, a competitively selected group of students came from universities and countries around the world to live and work together with distinguished international faculty in an intensive week-long residential program. Each year, the program was held in a different city, which was not only the physical location, but the substantive context for the experience. The grant provided for a program director and staff; housing, meals, local transportation, and materials for all students and

faculty; and needs-based travel support for students enrolled at US institutions. The cost per student varied by location, but was about US\$5000 per individual.

The remainder of this paper presents the results of a longitudinal evaluation of the iGov strategy. We begin with a review of existing models for international engagement and training, then describe the experimental strategy, and present the methodology and results of the evaluation from the perspective of the participants. We conclude with a discussion of the findings and their implications for fostering future international DG research and education.

2. MODELS OF INTERNATIONAL ENGAGEMENT

Due to globalization trends and national strategic interests, U.S. universities and post-secondary education policy took a “global turn” in the last two decades by internationalizing curriculum and rearticulating university missions [2]. The goal of international education, generally, is to foster “an international orientation in knowledge and attitudes by bringing together teachers and scholars in academic exchange and interchange” [1, p. 918]. A handful of empirical studies have examined the experiences of undergraduates, and find that students who have traveled or studied overseas in international education programs develop greater communicative capacity for languages, interact appropriately in other cultures, and acquire problem-solving skills for international living [3]. While there is some literature on, and evaluations of, international education models, there is little cumulative evidence pertaining to graduate programs or addressing their impact on graduate student research.

Several international education models are available to undergraduate and graduate students, which include study abroad programs, scholar-initiated visits, faculty-initiated projects, and residential institutes. Study abroad programs are generally organized by academic institutions and geared toward their own undergraduates. Students spend a specified period of time in short (2 to 3 weeks), mid-length (6 to 8 weeks), or long-term (half or full academic year) engagements at a host university in another country. Students are immersed into university campus life, and in some cases, the programs offer field trips to explore the country. Scholar-initiated programs, such as visiting exchanges or individual Fulbright training scholarships [2], are geared toward graduate students and faculty. Participants apply for and arrange their own program or research plan for one semester up to multiple academic years. Faculty-initiated group practice or research experiences, such as the University at Washington’s exploration seminars [7] or the Fulbright group research grants [2], create opportunities for faculty to take students out of their classrooms and immerse them in international practice or research settings for brief periods of one to several weeks. Lastly, residential institutes, conducted outside of a university’s regular academic schedule, bring students together from different institutions via a competitive admission process for one to four weeks. Residential institutes create a microcosm of university life using the traditional lecture and classroom settings.

We found some evaluations of these typical models. For example, in 2009, the National Science Foundation (NSF), through the Directorate for Engineering, commissioned an evaluation of the International Research and Education in Engineering (IREE) program [4]. The program provided support for international travel to early-career researchers in the U.S. that enabled them to gain international research experience and perspective, and

provide closer research interaction between U.S. institutions and their foreign counterparts. A total of 84 graduate students in engineering participated by traveling to 10 different countries. The average grant awarded was \$28,500, the duration of travel lasted on average 90 days. The evaluation was conducted over a six-month period by analyzing budget data from NSF, trip reports filed by participants in 2006 at the end of their experiences, and interviews with a sample of participants. Overall, the evaluation concluded that most participants gained new research experiences and perspectives, but graduate and postdoctoral participants were more likely to have acquired new tools, methods, or techniques. A challenge noted by participants was that the program characteristics made U.S. participants “guests” rather than “colleagues” of the host institutions in other countries.

The German Academic Exchange Service (DAAD) commissioned the Institution for International Education (IIE) to evaluate its Research Internships in Science and Engineering (RISE) program between 2004 to 2008 [5]. The program paired undergraduate U.S. and Canadian students with PhD student mentors in science and engineering at German universities for summer internships and research opportunities. The scope of the assessment included pre- and post-assessment surveys of U.S. and Canadian undergraduate interns and German Ph.D. student mentors. Follow-up surveys were administered to previous cohorts dating back to 2004. The evaluation looked at both programmatic effects and long-term outcomes. The data was based on the 2008 cohort (n=302), and 214 responses. Approximately 77 percent of students came from a U.S. institution, while 23 percent were from a higher education institution in Canada. Forty percent classified themselves as graduate students. Approximately 77 percent of the interns felt that their overall expectations of the program were met and the vast majority of interns (87 percent) agreed that they were satisfied with the amount of practical, hands-on research that they were involved in during the internship. The evaluation concluded that the program enhanced participants’ international capabilities, which included a combination of deepened cross-cultural understanding, knowledge of another country’s systems and practices, and a broader academic and professional outlook that goes beyond the scope of their home country. Lastly, 81 percent agreed or strongly agreed that the program reinforced their commitment to pursuing a science or engineering degree and their interest in pursuing a career related to science or engineering (83 percent).

Both evaluations recommended a strong evaluation methodology at the outset of the program, including more formal methods for capturing on-site research activities and cultural dimensions of the experience, as well as doing pre- and post- analysis, and attention to long-range output and impact measurements.

Unlike European models of higher education, which often include an extended visit in an institution in another country, American doctoral training usually takes place entirely in the student’s home institution. In a set of EU-US international research partnerships, however, student exchanges were seen as a crucial link between the investigators in different countries. These exchanges followed a typical model in which one student spent a summer or semester working with an international colleague of their home advisor [11]. As such, like the European model, they offered benefits to a single student who was able to move to a different country for several weeks or months to work in the same field in a different environment. In considering how best to build and support the digital government research community at an international scale, this project aimed for broader impact by testing a different

approach that offered a short, but intensive, international experience to cohorts of students representing a wide variety of disciplines and cultures, at modest personal and institutional cost.

The next sections describe this approach, known as the iGov Research Institute, and present the results of a longitudinal evaluation of its effects.

3. IGOV INSTITUTE

iGov comprises a “living laboratory” for exploring and assessing how information needs, policies, and technologies impact critical issues within and across cultures and governments. Through a variety of field and classroom activities organized around the experiences and problems of a specific city, region, or country, students developed a first hand understanding of these challenges. While the focal themes were chosen because of their particular importance in each locale (i.e., city management, economic development, quality of life, and intergovernmental relations), they are also widely shared by cities and regions around the world.

Each student cohort numbered between 14 and 22 students, representing between eight and 15 countries and six to eight different disciplines. An Institute director, program staff, and three senior faculty provided intellectual continuity for the program from year to year. Beginning in 2008 (the second year of the program), the faculty team was enlarged by three junior faculty who were invited from the previous year’s cohort. While all faculty were involved throughout the program, the junior faculty had a special role as mentors for the student working groups that were formed during the program.

3.1 Program Structure

Through the program structure, the iGov program created in one place, a crossroads of cultures, political systems, and scientific disciplines, where participants were able to interact with public sector leaders and serious contemporary public policy and management problems. The immersive aspects were crafted to expose students to (1) cultures outside of their own, and (2) research and practice problems embedded within a real world setting. Starting in 2008, the program began with a guided walking tour of the locale and an interactive “speed dating” (or paired interviewing) afternoon for getting to know one another and the place they would call home for the next week. In 2009, students presented their own research during breakfast meetings that allowed other faculty and students to engage in conversation about the topics presented. The main programmatic elements included:

- **Engagement with leading scholars in the field.** Lectures and in-depth discussions covered cutting edge topical areas, methodologies, and theories, as well as relating research to practice and sharing first-hand experience in doing international research.
- **Direct interaction with public sector leaders.** Through a series of field activities, students enriched their learning through discussions with experts ranging from elected officials to government managers to community organizers.
- **Participation in a small group project** on an international digital government research question designed to explore ways to work in multi-disciplinary and multi-cultural research teams. The group work was structured to provide some guidance without losing the sense of discovery. Although limited in time and scope, these group processes

represented an actual cross-disciplinary, cross-cultural research experience.

- **Opportunities to present their own developing research ideas and proposals** to their peers and faculty for feedback and discussion.
- **One-on-one discussions** of their research areas and questions with faculty.
- **Development of networks of relationships with other students and faculty** who share their interests. The program used several techniques to increase the amount of time students were able to spend in informal settings in order to forge stronger personal relationships. Starting in 2008, day one of the program began with an intensive socializing period – a welcome reception and facilitated “speed dating” or paired interview, exercise structured around five topics: expectations for the institute, current field and research interests, required readings, and native culture.

3.2 iGov Themes

Each year the Institute was held in a different city or region that is an international leader in some aspect of information age government innovation (see Table 1). This deliberate grounding in a real place and its government was a way of focusing the diversity of the group on a shared experience. Each year faculty talks focused on digital government as a research field, the connection between research and practice, and value-sensitive design and other collaborative methodologies for digital government research and development.

3.2.1 iGov 2007 New York City: City Management

iGov 2007 was held in New York City (NYC) to highlight the use of advanced information and communication technologies (ICTs) to manage city government and citizen services. Students interacted with senior city officials who shared the challenges of implementing program innovations and information technology solutions in a dense, highly diverse urban environment. Students visited a variety of government agencies to emphasize the breadth and depth of municipal efforts to make the city more efficient, accessible, and livable. These included a site visit to the NYC Health Department to discuss its diabetes education campaign, the 311 citizen call center which offers information in multiple languages about all city services, and the Port Authority to learn about a joint initiative with two transit agencies using radio frequency identification tags to unify and simplify mass transit usage, fares, and financial accounting for the metropolitan New York area. The program was hosted by the University at Albany and based in the Union Square neighborhood of Manhattan. The keynotes focused on international research careers and collaboration between the city council and the city IT agency.

3.2.2 iGov 2008 Manchester: Urban Regeneration

The University of Salford, in the UK hosted iGov 2008. Focusing on the role of advanced ICTs to support Manchester’s urban revival and regeneration agenda, students lived in Salford as their academic and residential base and conducted a series of site visits in and around Greater Manchester. The critical issues in Manchester at the time reflected severe pressures for social and economic development in an aging urban infrastructure. Specific topics included use of social media to develop underserved communities and congestion transportation pricing to control traffic tie ups in the city center.

Table 1. iGov Program at a Glance & Themes

Year	2007	2008	2009	2010
City	New York, NY	Manchester, UK	Seattle, WA	Delft & Den Haag, the Netherlands
Theme	City management	Urban revival and regeneration	Innovation and quality of life	eGovernment across local, national and global contexts
Faculty Presentation Topics	<ul style="list-style-type: none"> • International Research • Interdisciplinary DG Research • Transnational Research • Connecting Research & Practice • Careers and Opportunities in Digital Government Research 	<ul style="list-style-type: none"> • E-government Research Perspectives • Crossing National & Cultural Boundaries • Introduction to • Modeling and Matching Methodology, Value Sensitive Design • Designing Urban Simulations/Models • Demonstration of High End Virtual Reality • Connecting Research & Practice 	<ul style="list-style-type: none"> • Becoming Citizens: Wired Youth, the Online Generation in Public Life • Big Questions in Digital Government Research • Advancing E-Governance: Connecting Learning & Action • DG Research in International Settings • Value Sensitive Design • Methodologies for DG Research • Careers and Opportunities in Digital Government Research 	<ul style="list-style-type: none"> • Value-Sensitive Design and e-Governance • Big Questions in Digital Government Research • Advancing E-Governance: Connecting Learning & Action • Simulation and Gaming for e-Government • Service Orchestration and Infrastructure Development in e-Government • Careers and Opportunities in Digital Government Research
Discussion-based Site visits	<ul style="list-style-type: none"> • NYC Dept. of Health and Mental Hygiene • 311 Call Center • Port Authority of NY and NJ, New Jersey Transit, Metropolitan Transit Authority • Ellis Island 	<ul style="list-style-type: none"> • Gorton Monastery • Manchester Digital Development Agency • Centre for the Urban Built Environment • New East Manchester • Manchester Town Hall 	<ul style="list-style-type: none"> • Seattle Dept. of Information Technology • Seattle Dept. of Planning and Development • City of Seattle Emergency Operations Center • Seattle Central Library • eCityGov Alliance • Microsoft Corporation • Puget Sound Regional Council 	<ul style="list-style-type: none"> • Dutch Ministry of Interior and Kingdom Affairs • City of Den Haag • Port of Rotterdam • International Criminal Court • Dutch Immigration and Naturalization Service

Students visited both government and non-profit agencies including Gorton Monastery to see a community-based redevelopment project in process, the Manchester Digital Development Agency (MDDA) which supports regeneration through strategic and practical technology-focused projects, and the Manchester Community Information Network, a non-profit organization dedicated to increasing social inclusion through ICTs. A keynote lecture focused on the future research agenda for e-democracy.

3.2.3 iGov 2009 Seattle: Innovation and Quality of Life

In 2009 iGov focused on innovation and quality of life issues in Seattle and the rapidly growing but environmentally sensitive Puget Sound region. The program was hosted at the University of Washington. Site visits to public agencies included Seattle's Department of Information Technology, Department of Planning and Development and Seattle's Central Public Library to better understand IT strategies for maintaining and improving life in the city. The group also visited the eCityGov Alliance, an intergovernmental collaborative of 34 municipalities with the mission to provide Web-based services to all of their constituents on a regional basis. Similarly a visit to the Puget Sound Regional Council offered a window into the operations of this intergovernmental agency, which provides a mechanism for local governments and transportation agencies to plan for the future of the region by addressing issues that go beyond the boundaries of any individual city or county. A visit to Microsoft Corporation

provided a look at the company's intergovernmental business activities and an opportunity to experience virtual reality labs for the future home and office. A keynote lecture focused on civic learning through online youth engagement in politics.

3.2.4 iGov 2010 Delft & Den Haag: eGovernment across Local, National, and Global Contexts

Moving back to Europe, iGov 2010 took place in Delft and Den Haag, hosted by Technical University of Delft. Given the compact arrangement of municipalities, national government, and important international agencies in one small geographic area, the week focused on the theme of information sharing and collaboration across local, national, and global contexts. Site visits included the Ministry of Interior and Kingdom Relations which oversees the national e-government agenda, the city of Den Haag, the internationally important Port of Rotterdam, and the Immigration and Naturalization Service (IND). Each is working on a project that requires cross-boundary information sharing and interoperability, ranging from cargo and shipping data, to a nation-wide project aimed at improving inter-city and inter-governmental information sharing to improve systems for immigration and asylum. Keynotes included the challenges of a diplomatic career, ethics in technology, and the use of gaming as a research methodology.

4. EVALUATION METHODOLOGY

The iGov evaluation took place during years 2007-2010. Using surveys and observations, the evaluation of the iGov Institute

strategy addressed two goals. The first goal was to continually improve the Institute by assessing the strengths and weaknesses of each year's program including curriculum, speakers, site visits, location, and overall experience. Using formative assessments provided an active learning cycle from year to year. For example, the addition of a local walking tour, speed dating exercise, and junior faculty were the results of the first year evaluation.

The second, and more long-term goal, was to understand to what extent the iGov strategy for international education and community building 1) leads to increases in the amount, quality, and pervasiveness of international digital government research and teaching by the participants in their subsequent career paths, 2) leads to long-lasting professional relationships across national boundaries, and 3) encourages American students to eventually study or work in other countries (a particular goal for NSF).

A series of surveys were collected from each cohort at different time periods – right after participation (exit survey), and one, two, and three years later (follow-up surveys). This paper presents the results of the initial (at exit) effects for all four cohorts and longer lasting effects (one- and two-years later) for the 2007-2009 cohorts.

An exit survey was administered to all of the iGov cohorts (i.e., 2007-2010, total n = 74) within two months of attending the institute. In total, 74 participants responded (a 100 percent response rate). Follow-up surveys were administered to the 2007, 2008, and 2009 cohorts one year later (total n=54). A total of 46 participants responded (an 85 percent response rate, including at least 85 percent from each cohort).

The iGov evaluation looked at whether the iGov experience contributed to certain individual career effects, increased international and cultural awareness, and enhanced scholarly development and products. Figure 1 below provides the overall evaluation model. While the model contemplates the long-term community-oriented outcomes of the program, the 2007-10 timeframe of this analysis and paper focuses mainly on the individual effects.

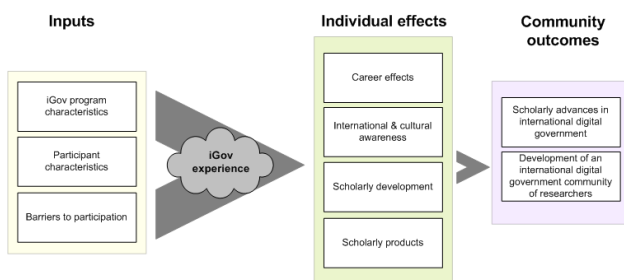


Figure 1. iGov Evaluation Logic Model

To assess the participants' perceptions of the iGov experience, the evaluation team constructed an exit survey consisting of 10 Likert scale items with multiple sub-items, open-ended questions, and network questions. The subsequent follow-up surveys tracked the changes in attitudes and opinions of a sub-set of the 10 Likert scale exit survey questions, and added additional Likert scale and open ended questions. Together the surveys covered the following topics:

- Opinions about general and specific elements of experience
- Assessment of the value of certain features of the iGov program, such as the value of discussion-based site visits

- Identification of research products such as journal articles, or dissertations associated with iGov participation or influence
- Interactions in the larger DG community during the time of the experiment such as conference participation
- Barriers to engaging in international education opportunities such as funding or visa requirements
- Demographic questions such as amount of international experience, discipline, institutional location, and year in doctoral program
- Several open-ended questions covering personal and professional benefits or achievements, and other community building activities.

We analyzed the data using both descriptive and inferential methods. The exit and follow-up surveys were analyzed by individual cohort and also combined to represent an overall assessment of the iGov strategy. Additional variables were created or calculated in order to assign respondents to groups according to citizenship (US versus non-US), by gender, by status in doctoral program (Advanced - 3 or more years versus Early - two or fewer years), home base of educational institution (US-based versus Internationally-based), and citizenship in a developed or developing country.

5. SURVEY FINDINGS

5.1 Student Characteristics

Table 2 shows the characteristics of the four iGov cohorts. Over four years, iGov brought together 74 doctoral students from 35 countries. Countries included Argentina, Australia, Brazil, Brunei, Bulgaria, Canada, China, Croatia, Denmark, France, Finland, Germany, Greece, India, Israel, Italy, Libya, Lithuania, Netherlands, Nigeria, Norway, Philippines, Poland, Saudi Arabia, St. Lucia, Sri Lanka, South Korea, Sweden, Switzerland, Taiwan, Thailand, Tonga, Turkey, Uganda, United States, and Venezuela. The institute attracted students from eight to 11 countries each year. The greatest number of U.S. students, who were also U.S. citizens, attended in the years when the institute was held in the U.S (2007 and 2009).

Students came from a variety of disciplines and progression in their doctoral programs ranging from nearly graduated to beginning students. Areas of study were grouped into five summary categories: computer and information science, government, management, social sciences, and built and natural environment. Examples of specific fields were informatics, computer science, public administration, communication, forestry, political science, and anthropology.

The mean experience in DG research of each cohort ranged from 3.1 years in 2007 to 3.5 years in 2010 and experience in comparative or transnational work from 2.2 years in 2007 to 3.3 years in the 2010 cohort. Prior to attending the institute, more than half of all students had at least moderate exposure to government or non-profit practitioners or agencies and organizations involved in government or community affairs. Roughly a quarter of all attendees had similar amounts of exposure to citizens and their views on public issues.

Table 2. Characteristics of iGov cohort s*

	2007	2008	2009	2010
N of students	14	20	20	20
N of countries represented	8	14	14	15
N of areas of study represented	7	6	8	8
US citizens as percent of cohort	29%	15%	20%	9%
Mean years of previous experience in DG research	3.1	3.3	3.5	--
Mean years of previous experience in comparative or transnational work	2.2	3.0	3.3	--
Percent with moderate previous exposure to practitioners	--	60%	60%	35%
Percent with moderate previous exposure to agencies or non profits	--	50%	55%	35%
Percent with moderate exposure to talking with citizens about their views on public issues	--	15%	25%	25%
* data drawn from both exit and follow up surveys -- indicates the question was not asked on this survey or the cohort has not taken a follow up survey				

5.2 Overall Institute Quality

All four cohorts rated the overall quality of the institute as excellent (an overall mean score of 4.47 on a 5- point scale, n=72). Table 3 shows that all programmatic elements received high positive ratings. Students expressed how these elements came together in open-ended comments stating, "Being injected into a new setting was very valuable to me. While I do interact with practitioners and scholars, it was a new and exciting experience to interact with them in a foreign setting," and another noted that the institute "provides a unique opportunity to interact with these difficult to reach government officials and bridge the practitioner-researcher divide." The one-on-one time with faculty also provided time for reflection and mentoring, one student noted "I really valued the willingness of the faculty to engage with us at all times, during meals and casual time."

As described earlier, the small working groups, which met over three to four days of the seven-day program, represented a concentrated experience as an actual cross-disciplinary, cross-cultural research team. The assignment was very loosely structured to give students maximum freedom to choose their topic that addressed some aspect of their experience during the week, their approach, and presentation style. The groups prepared analyses and proposals for how their future research could contribute to effective, equitable, and sustainable approaches to these problems that are scientifically rigorous and culturally aware. In this process, the students also built an international network of future colleagues.

All students found this challenging, but most agreed that it helped foster awareness of cultural factors in research, and enhanced their ability to work across cultural and disciplinary lines. They also gained an appreciation for the difficulty of not only designing but executing international research. One student described the frustration and the benefit stating, "[Personally, I felt] the group

project, though difficult and seemingly impossible at times, was also helpful. You forced six PhD students from various disciplines and countries to decide on a topic, do some research, and prepare a presentation. [In addition] to it being a bonding ritual, it was also a crash course on international and cross-disciplinary collaboration."

5.3 Immediate Effects

The annual exit surveys confirmed that the iGov Institute influenced young academics in the short term (Table 3). Across all four years, respondents strongly agreed that the institute's design and content fostered a sense of intellectual community (4.49), improved participants' understanding of practical international DG challenges (4.38), and introduced students to useful ideas outside of their main fields (4.28). One student stated, "[the Institute is] a wonderful research experience, where you learn a lot about e-government's application around the world, and new ideas [emerge] for your research..." Another student noted, "After this Institute, I began to seriously consider studying abroad for about 2 years, which would provide me more opportunities to communicate with foreign scholars."

These strongly positive perceptions hold up across different groups although the effects are more strongly pronounced for some types than others. For example, students who were either U.S. citizens or enrolled in U.S.-based institutions perceived greater improvement in their understanding of practical international DG challenges and were more strongly affected by the introduction to ideas outside of their main fields of study. These differences were statistically significant (t-test, p<.05). In addition, students enrolled in U.S. based institutions perceived iGov influencing their dissertation topics more than students being educated outside of the U.S.

Lastly, students who were citizens of developing countries perceived the experience to be even more highly positive than students from developed countries. Those students from developing countries recorded higher mean scores for fostering a sense of intellectual community, contributing to research or professional goals, and prompting future consideration of comparative or transnational DG research. These differences are statistically significant (t-test, p<.05). We suspect that all of these opportunities are less likely to be accessible to early career scholars in developing countries which may explain the higher value they placed on these elements of the iGov experience.

5.4 Longer Term Effects

The follow-up surveys showed that iGov's positive impact on students' career development, interest in international research, and international awareness actually increased over time. This suggests that the experience has a sustained positive influence on attitudes. For example, students reported that the iGov Institute continued to increase their awareness and ability to conduct international investigations and to include multi-cultural aspects in their research and teaching in the one to two year period after they attended (Table 4).

In addition, the institute's impact on participants' research or professional goals, inclination to do future comparative or transnational DG research and ability to work across cultures continued to be positive, and generally showed a continuing upward trend over time. The follow-up surveys also show that participants remain very interested in doing international research, but perceptions of the opportunities available to them are slightly more modest.

Table 3. Summary of immediate effects

	Exit survey for				
	2007	2008	2009	2010	Overall
	n=14	n=20	n=20	n=20	n=74
	Mean	Mean	Mean	Mean	Mean
<i>Program characteristics and components</i>					
Overall quality of Institute	4.08	4.40	4.74	4.55	4.47
Value of participating in small groups	--	4.30	4.85	4.85	4.82
Made good use of the location as an integral part of the program	4.57	4.55	4.85	4.60	4.72
Value of presenting and discussing student research	--	--	4.75	4.40	4.65
Having junior faculty as mentors for the week	--	4.55	4.75	4.70	4.55
Overall value of practitioner sessions and site visits	4.62	3.95	4.68	4.22	4.55
Encouraged student and faculty interaction	4.29	4.20	4.25	4.45	4.35
Overall value of faculty presentations and discussions	4.09	4.25	4.41	4.11	4.30
<i>Short-term strategy effects</i>					
Improved my understanding of practical international DG challenges	4.64	4.25	4.40	4.30	4.38
Introduced me to useful ideas outside my main field	4.21	4.30	4.40	4.20	4.28
Institute design and content fostered a sense of intellectual community	4.29	4.30	4.70	4.60	4.49
Heightened my awareness of cultural factors in my research	3.85	3.90	3.94	3.50	3.79
Heightened my awareness of cultural factors in my teaching	3.62	3.71	3.37	3.47	3.64
Heightened my awareness of cultural factors in my every day life	3.38	3.70	3.60	3.50	3.66
Enhanced my ability to work across disciplines	3.62	3.85	4.10	4.15	3.96
Enhanced my ability to work across cultures	3.62	3.80	4.20	4.00	3.93
Lead to long-lasting professional relationships	3.77	4.00	4.60	4.16	4.17
Contributed to my own research or professional goals	3.71	3.70	4.35	3.95	3.95
Prompted me to consider a wider variety of career choices	3.62	3.15	4.40	3.67	3.45
Influenced my dissertation topic	2.69	2.75	3.20	2.70	2.85
Influenced my dissertation research design	--	--	2.90	2.89	2.90
Influenced my dissertation methods	2.15	2.75	2.70	2.84	2.69
Influenced my dissertation question(s)	--	--	3.15	2.79	2.97

Table 4. Summary of longer-term effects

	2007			2008			2009	
	At exit	1 year later	2 years later	At exit	1 year later	2 years later	At exit	1 year later
	n=14	n=12	n=13	n=20	n=17	n=14	n=20	n=17
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Increased my interest in international DG research	--	4.08	4.23	--	4.24	4.21	--	4.56
Increased my opportunity to do international DG research	--	4.00	4.00	--	3.88	4.31	--	3.94
Heightened my awareness of cultural factors in my research	3.85	4.00	4.31	3.90	3.76	4.38	3.94	4.00
Heightened my awareness of cultural factors in my teaching	3.62	3.50	4.00	3.71	3.76	4.08	3.37	3.81
Heightened my awareness of cultural factors in my every day life	3.38	3.64	3.77	3.70	3.82	4.36	3.60	4.13
Enhanced my ability to work across disciplines	3.62	3.75	4.31	3.85	3.82	4.36	4.10	4.29
Enhanced my ability to work across cultures	3.62	--	4.00	3.80	3.82	4.29	4.20	4.24
Lead to long-lasting professional relationships	3.77	3.45	3.54	4.00	3.76	3.79	4.60	4.25
Prompted me to consider a wider variety of career choices	3.62	3.82	3.23	3.15	3.65	3.79	4.40	3.80
Influenced my dissertation topic	2.69	--	2.54	2.75	3.29	3.69	3.20	3.60
Influenced my dissertation research design	--	2.64	2.62	--	3.47	3.46	2.90	3.53
Influenced my dissertation methods	2.15	2.82	2.69	2.75	3.53	3.62	2.70	3.47
Influenced my dissertation question(s)	--	2.91	2.54	--	3.35	3.62	3.15	3.40

¹ 5-point scale where 1 is most negative and 5 is most positive

-- indicates the question was not asked on this survey or the cohort has not taken a follow up survey

The perception of being able to foster long-lasting professional relationships was highest right after the institute and was more modest, but sustained at a positive level, over time. We surmise that dissertation pressures for most students left less time to cultivate these relationships. One student noted in a follow-up survey, “Once I’ve gathered my dissertation data and I am in the writing phase, I will be in a better position to reach out to fellow iGov participants to inquire about joint publications or conference papers. I feel as though I don’t have enough data now to pursue further collaboration with them, but will soon.”

In addition, sustained international awareness effects also appear to have been realized. At exit, participants reported iGov increased their awareness of cultural factors in their teaching, research, and everyday life (all scoring above the mid-point, Table 3). One and two years later, perceptions of iGov’s contribution to increased cultural awareness in teaching, research, and everyday life continued to increase (Table 4).

Tables 5 and 6 present the research productivity and scholarly engagement effects of the strategy as measured by reports of specific products that participants’ view as a direct result of attending iGov. The total number of outputs reported is more than double the number of survey respondents, indicating substantial research productivity, even at this early career stage. Table 6 shows the collaborative activity in the years following iGov. Short scholarly visits, joint research proposals, and joint conference panels were most common.

Table 5. Scholarly engagement: individual reports of collaboration with at least one other iGov participant

Type of engagement	N of respondents reporting		
	planned	in progress/complete	total
Joint manuscripts	4	4	8
Long scholarly visits	2	0	2
Short scholarly visits	5	5	10
Joint research proposals	6	5	11
Joint conference panels	4	1	5
Jointly developed software or other tools	1	1	2
Jointly developed curricula	4	0	4
Total by status	26	16	42

Table 6. Research productivity: individual reports of sole or jointly authored scholarly work influenced by iGov experience

Type of research activity	N of respondents reporting scholarly activity related to their iGov experience			
	In progress	Under review	Accepted or published	Total
Journal articles	22	19	16	57
Conference papers	21	20	23	64
Book chapters	17	17	17	51
Total by status	60	56	56	172

6. DISCUSSION AND IMPLICATIONS

This paper presented a quantitative evaluation of a strategy to encourage the development and growth of an international digital government research community at the doctoral level. It reported the results of a series of participant surveys about an annual residential institute for doctoral students designed to introduce them to international colleagues and the globally important connection between research and practice in digital government. The surveys, conducted separately for each of four cohorts, were administered at exit, and one and two years later, as a way to assess the immediate and longer lasting effects of the experience.

The iGov Institute strategy included a set of programmatic features consciously designed to create an experience that aimed at discovery as well as structured learning. Students were overwhelmingly positive about the immersion in a real place and its specific public problems and governmental and civil society organizations. Site visits and discussions with practitioners generated many ideas for the small group projects and also prompted some to revise their dissertation topics or approaches to incorporate more field work and empirical approaches. The opportunity to work closely in an informal setting with very experienced senior faculty was something that many had never experienced before.

The small groups represented an opportunity to choose and investigate a topic with new-found colleagues in a setting that was new to all of them. Students found this both daunting and exciting. Some found the freedom uncomfortable and preferred at least initially to just be given a set of instructions to follow. However, as the junior faculty mentors guided them through a group formation process, they usually drew on the variety of skills and perspectives in the group to produce results that had two effects: learning to work across disciplinary and cultural boundaries to approach a complex problem from multiple perspectives and building a research team in which the strengths of different participants could be brought together in a joint effort.

The one-week length of the program made it intense and concentrated – there was little time to spare as the program was packed with activities and students used their meal times and evenings to explore the locale and get to know each other and the faculty. Nevertheless, they overwhelmingly agreed that a short-term (one week to 10 days) was the “right” length of time, suggesting that an intensive, immersive, and relatively inexpensive program can have strong and lasting effects, as demonstrated in the survey results.

While the survey results suggest consistently positive effects, the results do have limitations, specifically related to the nature of using self-reported perceptions. However, these findings are at least anecdotally supported from other sources. For example, we know that several doctoral advisors recommended students for admission to the Institute in successive years based on their satisfaction with the results. Other supervisors have told us informally that their students who attended especially benefited from the research-practice connection, which is not often emphasized in traditional doctoral programs. Alumni were also eager to return as junior faculty mentors and continued to respond to successive surveys in high numbers. A number of our international colleagues have volunteered to join the faculty or host the program in future years.

The program overall appears to stimulate participants’ individual creativity, scholarly productivity, and professional networks, while broadening their appreciation for work that investigates

internationally important topics and involves not only multidisciplinary but multicultural teams. All of these effects will enhance the quality, versatility, and creativity of future digital government researchers.

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